

# The emergence of a faculty of organic agricultural sciences

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The city of Witzenhausen, in the central German state of Hessen, has a long tradition in agricultural education. A school for tropical and subtropical agriculture was founded there back in 1898, oriented at training agricultural experts for the German colonies. Since 1971, the city has hosted the Faculty of Agronomy, International Rural Development and Environmental Protection, which is part of the University of Kassel. Since 1995, the whole faculty has shifted from conventional to organic agriculture, renaming itself the Faculty of Organic Agricultural Sciences. Today it includes 20 professorships dealing with research and education in organic farming, with no more conventional agriculture activities: a unique situation in the whole world.

## A changing situation

During the last 50 years, German agriculture has seen drastic changes. Nationally, the amount spent on food decreased from 50 to 15 percent of the average family income between 1950 and 1995, while the EU budget for agriculture increased from 20 to 40 thousand million euros between 1975 and 1995. At the same time, approximately 60 percent of German farms closed their doors between 1950 and 1995. Agricultural land use, especially in less favourable regions, declined sharply, and only a very small percentage of the population remains employed in agriculture. Furthermore, as a result of intensive agricultural production methods, the country is currently witnessing serious environmental problems: increasing soil erosion, decreasing biodiversity, and water pollution with nitrates or pesticides. This development is not restricted to Germany or Europe, but represents a worldwide phenomenon. It is therefore no wonder that in the international debate the demand for a more sustainable development has gained more and more importance, at least since the Brundtland Commission and the UNCED-Conference 1992 in Rio, Brazil, where 178 head of states signed Agenda 21.

All over the world, as well as in Germany, there are many scientists who demand a shift in agricultural land use to a completely organic agriculture because of its environmental benefits or because of the possibilities it brings for creating rural employment. It is certainly a fact that in recent years organic farming, and with it the job market for organic agriculture specialists, has grown rapidly, stimulated by strong consumer demands and also by national and international policy initiatives. At the moment, the European Union agricultural policy offers member countries the possibility to support organic farming and marketing. Some countries like Denmark, Italy and Germany have therefore developed special action plans to support organic farming. For example, farmers get special subsidies for converting their farms to organic production. As a result, Germany has now almost 17 000 certified organic farms, cultivating 770 000 hectares or 4.5 percent of the country's agricultural land.

## Changing the curricula

Witzenhausen is a unique example of a bottom-up process of curriculum development. During the 1970s, after the international oil crisis and different environmental scandals, a strong anti-nuclear and back-to-nature movement developed in Germany.

Although there were only about 400 organic farms in Germany at that time, agricultural students demanded lectures in organic agriculture. They held demonstrations within the faculty, the university's main offices and also before the Hessen Ministry of Higher Education. They wrote letters to many agricultural organizations asking for support, and organized meetings with faculty members and with the president of the university. Having sufficient resources available at the time, the University of Kassel reacted positively, giving the agricultural faculty an additional professorship in "Methods of Alternative Agriculture". This unique professorship started in 1981, providing optional subjects to students while there was also a research farm for organic farming. Soon afterwards, another professor specialized on organic animal husbandry was appointed.



Photo: Author

**Analyzing the possibilities for organic farming on a field trip outside the university.**

Because students still had to follow many compulsory subjects in conventional farming approaches, they called for a special course in organic farming to be included in the curricula. This led to many discussions within the faculty, until it was approved in 1993. Apart from its focus on organic agriculture, a new holistic learning and teaching concept was developed and tested for this course, and it became so popular that by 1996 the faculty introduced a whole study-course in organic agriculture, leading to a Bachelor of Science degree as well as a Master of Science degree. Agricultural education at the university became organic agricultural education, with a curriculum that included other teaching methods to be integrated with the lectures, such as multidisciplinary courses, compulsory practicals and work in project groups. In 2002, the faculty introduced a second Masters course, taught in English (International Ecological Agriculture) to meet the international demand for scientific based courses in organic agriculture, focusing on organic farming under tropical and subtropical conditions. As from 2006, the faculty will offer a third Masters course (International Food Business and Consumer Studies), also in English, thus covering the whole organic food chain.

## General structure

A practical period of at least three months on a farm is one of the prerequisites for admission to the faculty. The Bachelor's degree requires two years of basic natural sciences and

agricultural subjects. These are all structured as modules of 180 hours each, to be completed within one semester, something that allows students to follow one semester at another university. In total there are sixteen compulsory modules, all of them considering agroecological principles in different ways. Besides a specific module on ecology and agroecosystems, for example, modules which look at crop production focus on crop rotation or the use of organic manure, disregarding the use of pesticides or chemical fertilisers. Similarly, animal production modules emphasize appropriate animal housing, feeding and welfare over mass animal production. The course is structured in such a way that all students cover five thematic fields (ecology, plant, animal, economics, and social aspects) to promote an interdisciplinary perspective which truly reflects organic agriculture.

Following this period of basic studies, students have several options for further specialisation with seven optional modules. Their Bachelors examination consists of a two-month thesis, with specific research on a self-chosen theme, and an oral exam. Further on, after this first degree they can continue with either a Masters course taught in German, focusing on German and European agriculture, or a Masters course in English, focusing on international agriculture and rural development. Students need then to follow 12 modules in three semesters. The final examination requires a five-month thesis and an oral examination.

### Learning objectives and methods

The main objective of the faculty is the development of site-specific solutions with minimal use of non-renewable resources, with special emphasis on the maintenance of nutrient cycles, a balanced relationship between productive and "non-productive" areas (natural landscape), and on the link between agricultural practice, the regional markets and rural development. Learning objectives for all courses include increasing scientific knowledge and practical skills, getting to know and use cycles in nature, and to think in an interdisciplinary way, to act responsibly, to exercise communicational, pedagogical and organisational skills, and to work scientifically.

New teaching and learning methods were introduced in order to meet all these objectives. For example, students have to present lectures and write scientific reports about special themes. They also have to organize and chair tutorial seminars with the support of a lecturer, write comprehensive minutes of seminars, or organize excursions or conferences dealing with special issues. It is expected that with these learning and teaching reforms the students not only achieve knowledge, but also other skills useful for their future working lives. Students are to work in a case-related, methodologically clear and discipline-specific manner, being marked for their teamwork abilities, their interdisciplinary thinking and their initiative in problem-solving.

During the last two semesters of the Bachelors course many students take part in a farm-conversion project. In this project, conventional farms of the region who are interested in organic farming agree to work together with a group of students for one year. They analyze their farms together and plan a realistic concept for the transition of the farm to organic farming.

Additionally, two special events take place in the middle of each semester: in summer there is a one-week excursion to another country to see how organic farming is practised there. The choice of the country to visit, the destination and the specific themes or topics to study are decided by the students them-

selves at the beginning of the winter semester. The whole excursion is organized and led by students. The same happens with a conference in the middle of the winter semester. At the beginning of the summer semester the students decide which theme they want to deal with. A group of about ten students prepare everything for the conference, including the funding. As with their participation elsewhere, the contribution of the students in these different projects also leads to marks.

### Quality assessment

During the pilot project, from 1995 to 1999, the course was intensively evaluated. Surveys of incoming students showed that there was an increasing number of students with little agricultural or farming background (around 75 percent), which meant that more attention was needed for the practical aspects of agriculture. Discussions with the students and with different experts showed the need to focus on the development of competences for self-employment in organic agriculture. Different discussions on the labour market for organic agriculture identified the need for further technical skills and abilities besides knowledge. Later evaluations have shown that students appreciate the new learning methods and the skills they develop. Tracer studies showed that about one third of graduates continue a career in farming, while another third becomes active in various services like consulting, agricultural associations or control bodies. In total, more than 30 percent of all graduates are working directly in organic agriculture, as farmers, consultants or in marketing.

With its focus on organic agriculture, the University of Kassel and its Faculty of Organic Agricultural Sciences is unique. It is also unique in the way it develops this focus, involving students actively in all lectures and also in lecturing, in the organization of conferences and excursions, or by actively working together with organic farmers and with farmers who want to become organic. A regular exchange with representatives of the labour market for organic agriculture takes place, and many different training courses and field days on special issues are organized, thus strengthening the links between theory and practice. Following many requests from abroad, the faculty has also increased its international activities with partner universities all over the world, with common research and student exchange programs. This all leads to students acquiring a solid knowledge and a holistic view of agriculture, together with key social qualifications such as communication, organization and pedagogic skills. It also facilitates a continuous evolution in the university's perspectives and approaches towards agriculture. ■

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